

Apn. No. 09/750,116
Docket No. NEC99P156-ms

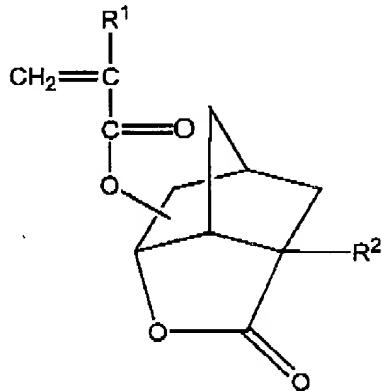
AMENDMENTS IN THE CLAIMS:

If entered, this listing of the claims will replace all prior versions, and listings, of claims in the application. Below, claims 15, 18, and 21-22 are currently amended. Claims 24-26 are new.

LISTING OF THE CLAIMS:

1. (Original) A (meth)acrylate derivative represented by the formula (1):

(1)



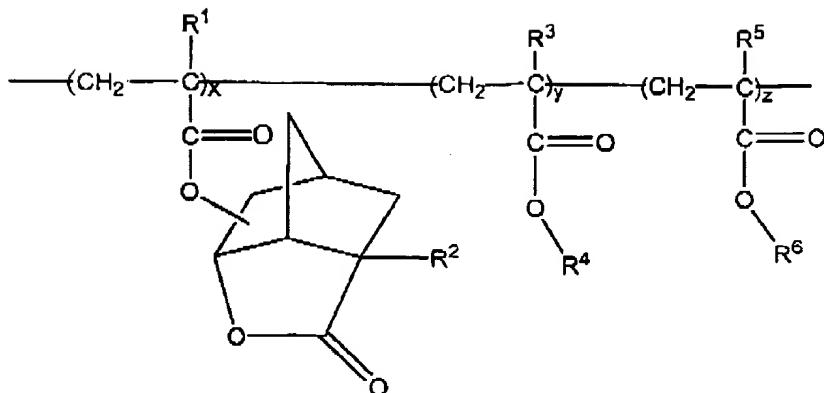
wherein R¹ and R² are each a hydrogen atom or a methyl group.

2. (Previously Presented) A polymer which is obtained by polymerizing the (meth)acrylate derivative according to claim 1, or copolymerizing the (meth)acrylate derivative according to claim 1 with another polymerizable compound.

3. (Original) The polymer according to Claim 2 which is represented by the formula (2) and has a weight-average molecular weight of 2000 to 200000:

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(2)



wherein R¹, R², R³ and R⁵ are each a hydrogen atom or a methyl group; R⁴ is an acid-labile group, an alicyclic hydrocarbon group having 7 to 13 carbon atoms, which has an acid-labile group, an alicyclic hydrocarbon group having 7 to 13 carbon atoms, which has a carboxyl group, or a hydrocarbon group having 3 to 13 carbon atoms, which has an epoxy group; R⁶ is a hydrogen atom, a hydrocarbon group having 1 to 12 carbon atoms, or an alicyclic hydrocarbon group having 7 to 13 carbon atoms, which has a carboxyl group; and x, y and z are optional values which meet x + y + z = 1, 0 < x \leq 1, 0 \leq y < 1 and 0 \leq z < 1.

4. (Previously Presented) A photoresist material comprising:

the polymer according to claim 2; and

a photo-acid generator for generating an acid by exposure.

5. (Previously Presented) A photoresist material comprising:

the polymer according to claim 3; and

a photo-acid generator for generating an acid by exposure.

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6. (Previously Presented) A photoresist material according to claim 4, further comprising:
a polyhydric alcohol.

7. (Previously Presented) A photoresist material according to claim 5, further comprising:
a polyhydric alcohol.

8. (Previously Presented) A photoresist composition, comprising:
70 to 99.8% by weight of the polymer according to claim 2; and
0.2 to 30% by weight of a photo-acid generator for generating an acid by exposure.

9. (Previously Presented) A photoresist composition, comprising:
70 to 99.8% by weight of the polymer according to claim 3; and
0.2 to 30% by weight of a photo-acid generator for generating an acid by exposure.

10. (Previously Presented) A method for forming a pattern, comprising:
applying the photoresist material according to claim 4 onto a substrate to be worked;
exposing the material to a light having a wavelength of 180 to 220 nm;
baking said material; and

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selectively dissolving one of an exposed portion and an unexposed portion of said material to develop said pattern.

11. (Previously Presented) A method for forming a pattern, comprising:
applying the photoresist material according to claim 5 onto a substrate to be worked;
exposing the material to a light having a wavelength of 180 to 220 nm;
baking said material; and
selectively dissolving one of an exposed portion and an unexposed portion of said material to develop said pattern.

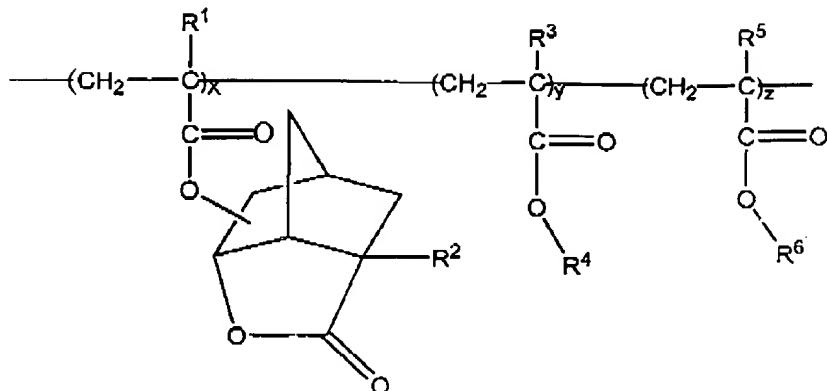
12. (Previously Presented) The method for forming the pattern according to claim 10 wherein said light comprises an ArF excimer laser light.

13. (Previously Presented) The method for forming the pattern according to claim 11 wherein said exposure light comprises an ArF excimer laser light.

14. (Original) A polymer which is represented by the formula (2) and has a weight-average molecular weight of 2000 to 200000:

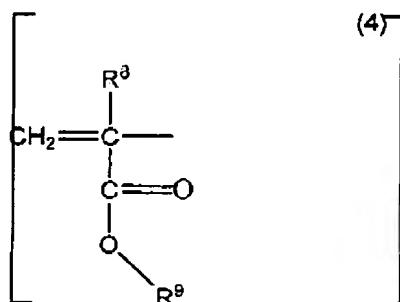
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(2)



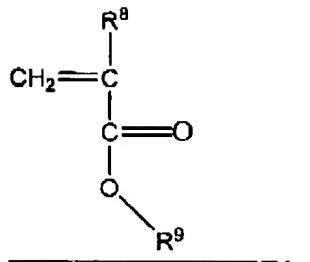
wherein R¹, R², R³ and R⁵ are each a hydrogen atom or a methyl group; R⁴ is an acid-labile group, an alicyclic hydrocarbon group having 7 to 13 carbon atoms, which has an acid-labile group, an alicyclic hydrocarbon group having 7 to 13 carbon atoms, which has a carboxyl group, or a hydrocarbon group having 3 to 13 carbon atoms, which has an epoxy group; R⁶ is a hydrogen atom, a hydrocarbon group having 1 to 12 carbon atoms, or an alicyclic hydrocarbon group having 7 to 13 carbon atoms, which has a carboxyl group; and x, y and z are optional values which meet x + y + z = 1, 0 < x \leq 1, 0 \leq y < 1 and 0 \leq z < 1.

15. (Currently Amended) A (meth)acrylate derivative having an alicyclic lactone structure which is represented by the formula (4):



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(4)

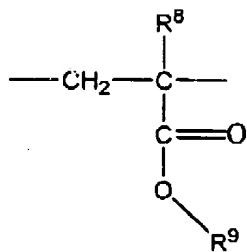


wherein R⁸ is a hydrogen atom or a methyl group; R⁹ is a hydrocarbon group of 7 to 16 carbon atoms having an alicyclic lactone structure.

16. (Previously Presented) A polymer which is obtained by polymerizing the (meth)acrylate derivative according to claim 15, or copolymerizing the (meth)acrylate derivative according to claim 15 with another polymerizable compound and has a weight-average molecular weight of 2000 to 200000.

17. (Previously Presented) A resin for resist having a solubility to an alkaline aqueous solution which increases due to the decomposition of an acid-decomposable group thereof by an action of an acid, said resin comprising a (meth)acrylate unit of an alicyclic lactone structure represented by the formula (3):

(3)

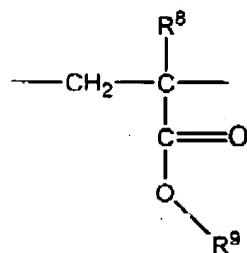


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wherein R⁸ is a hydrogen atom or a methyl group, and R⁹ is a hydrocarbon group of 7 to 16 carbon atoms having an alicyclic lactone structure.

18. (Currently Amended) The A resin for resist according to claim 17 having a solubility to an alkaline aqueous solution which increases due to the decomposition of an acid-decomposable group thereof by an action of an acid, said resin comprising a (meth)acrylate unit of an alicyclic lactone structure represented by the formula (3):

(3)



wherein R⁸ is a hydrogen atom or a methyl group, and R⁹ is a hydrocarbon group of 7 to 16 carbon atoms having an alicyclic lactone structure, wherein said resin comprises the polymer according to one of claim 2 or claim 14.

19. (Previously Presented) A photoresist material comprising:
the polymer according to one of claims 14 or 16; and
a photo-acid generator for generating an acid by exposure.

20. (Previously Presented) The photoresist material according to claim 19, further comprising:

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a polyhydric alcohol.

21. (Currently Amended) A photoresist composition comprising:

70 to 99.8% by weight of the polymer resin for resist according to one of claims 17 or 18;
claim 17, and

0.2 to 30% by weight of a photoacid generator for generating an acid by exposure.

22. (Currently Amended) A method for forming a pattern comprising:

applying the photoresist composition according to claim 21 onto a substrate to be worked;

exposing the composition to a light having a wavelength of 180 to 220 nm;

baking said material composition; and

selectively dissolving one of an exposed portion and an unexposed portion of said material composition to develop said pattern.

23. (Previously Presented) The method for forming the pattern according to claim 22, wherein said light comprises an ArF excimer laser light.

24. (New) A photoresist composition comprising:

70 to 99.8% by weight of the resin for resist according to claim 18, and

0.2 to 30% by weight of a photoacid generator for generating an acid by exposure.

25. (New) A method for forming a pattern comprising:

applying the photoresist composition according to claim 24 onto a substrate to be worked;

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exposing the composition to a light having a wavelength of 180 to 220 nm;
baking said composition; and
selectively dissolving one of an exposed portion and an unexposed portion of said
composition to develop said pattern.

26. (New) The method for forming the pattern according to claim 25, wherein said
light comprises an ArF excimer laser light.